

**STATEMENT OF BASIS FOR APPROVAL
OF
NO FURTHER ACTION FOR SEVEN SOLID WASTE
MANAGEMENT UNITS**

RCRA Corrective Action Program

HOLLOMAN AFB

NEW MEXICO



**ENVIRONMENTAL FLIGHT
ENVIRONMENTAL RESTORATION PROGRAM
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HOLLOMAN AFB, NEW MEXICO**

JUNE 2005

**STATEMENT OF BASIS FOR APPROVAL
OF
NO FURTHER ACTION FOR 7 SOLID WASTE
MANAGEMENT UNITS**

**RCRA Corrective Action Program
HOLLOMAN AFB, NEW MEXICO**

Prepared By:

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June 2005

STATEMENT OF BASIS FOR APPROVAL OF NO FURTHER ACTION FOR 7 SOLID WASTE MANAGEMENT UNITS

RCRA Corrective Action Program HOLLOMAN AFB, NEW MEXICO

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ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
AFB	Air Force Base
BBMS	Bare Base Mobility Squadron
bgs	Below Ground Surface
BTEX	Benzene, toluene, ethyl benzene, xylenes
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CES/CEV	Civil Engineering Squadron/Combat Engineer Vehicle
cm	Centimeter
cm/sec	Centimeters per Second
DPT	Direct Push Technology
DRO	Diesel-Range Organics
EPA	Environmental Protection Agency
ERP	Environmental Restoration Program
FID	Flame Ionization Detector
FST	Field Service Tank
FWENC	Foster-Wheeler Environmental Corporation
GRO	Gasoline-Range Organics
HAFB	Holloman Air Force Base
HSWA	Hazardous and Solid Waste Amendments
IRA	Interim Remedial Action
IRP	Installation Restoration Program
kg	Kilogram
L	Liter
lbs	Pounds
LNAPL	Light Non-aqueous Phase Liquid
LTM	Long Term Monitoring
mg	Milligram
µg	Microgram
mL	Milliliter
ML	Silty sand
MOBBS	Mobile Bare Base Squadron
NFA	No Further Action
NMED	New Mexico Environment Department
NMWQCC	New Mexico Water Quality Commission
ORO	Oil-Range Organics
OWS	Oil/water Separator
OVA	Organic Vapor Analyzer
PA/SI	Preliminary Assessment/Site Investigation

PCB	Polychlorinated Byphenol
PCS	Petroleum-Contaminated Soils
PID	Photo Ionization Detector
PMEL	Petroleum Materials Evaluation Laboratory
POL	Petroleum, Oil and Lubricants
PPM	Parts Per Million
PSH	Phase Separate Hydrocarbons
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
SM	Sandy-silt
SSL	Soil Screening Level
SVOC	Semi-Volatile Organic Compounds
SWMU	Solid Waste Management Unit
TCE	Trichloroethene
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TRPH	Total Recoverable Petroleum Hydrocarbons
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
VCA	Voluntary Corrective Action
VCM	Voluntary Corrective Measures
WWTP	Wastewater Treatment Plant

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A. INTRODUCTION

The New Mexico Environment Department (NMED) has made a final determination to approve the Holloman Air Force Base (AFB) request to remove 7 Solid Waste Management Units (SWMUs) from the Hazardous and Solid Waste Amendments (HSWA) Corrective Action module Resource Conservation and Recovery Act (RCRA) permit No. NM 657214422-1

B. FACILITY DESCRIPTION

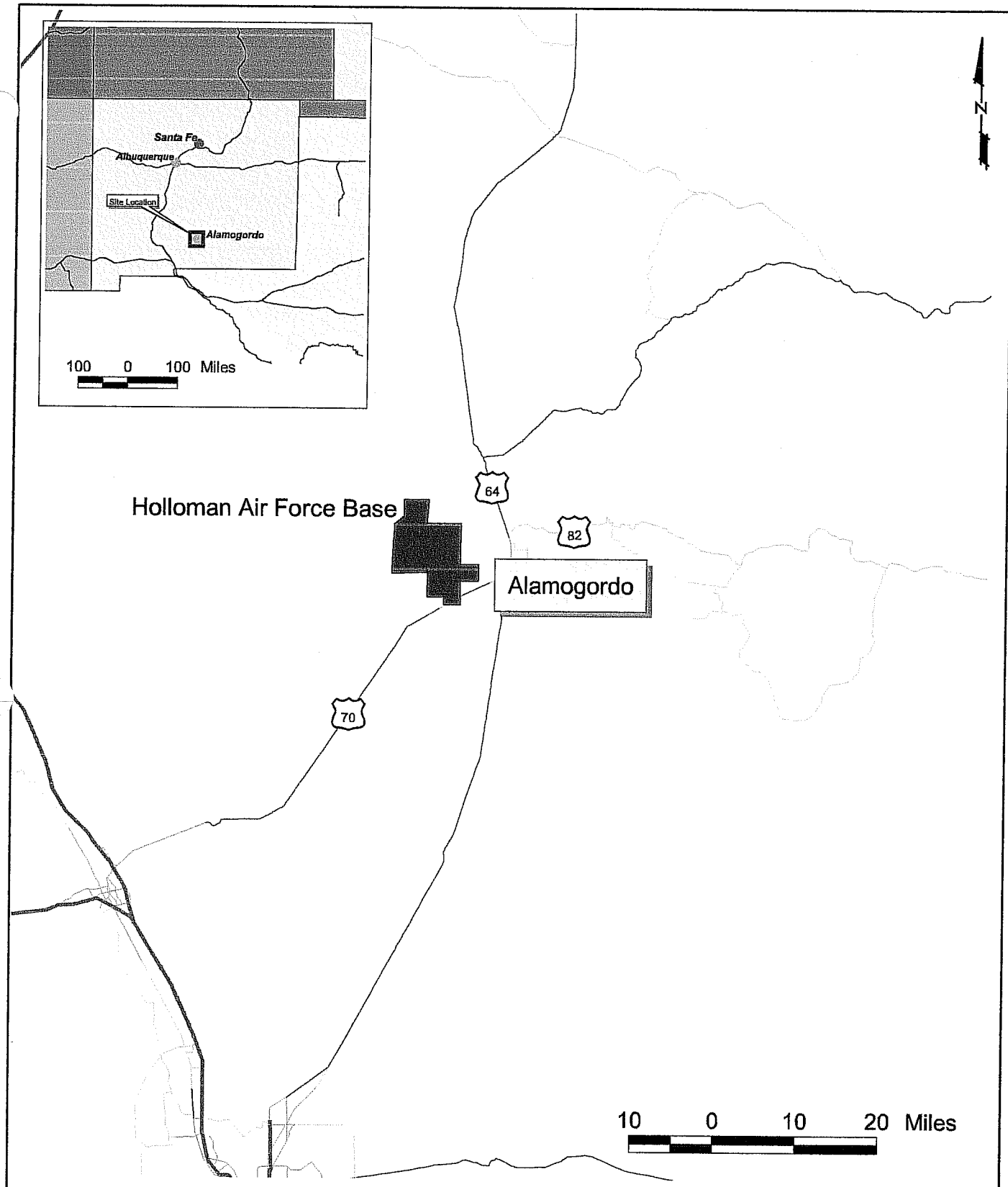
Holloman AFB is located on approximately 59,827 acres of land in Otero County in south central New Mexico (Figure 1). The Base lands are situated in the northern Chihuahuan Desert in the region known as the Tularosa Basin. The basin is bound to the east and west by the Sacramento and San Andreas Mountains, respectively. The Base is located adjacent to White Sands Missile Range, and White Sands National Monument is located west of the Base.

The nearest population center is the city of Alamogordo, located approximately seven miles to the east. Regional metropolitan centers include El Paso, Texas located 90 miles south-southwest and Las Cruces, located 70 miles southwest of the facility. The primary transportation route for the facility is Highway 70 that transverses the southern boundary of the Base.

Currently, Holloman AFB hosts the Air Combat Command 49th Fighter Wing, which includes pilot training, mobility support, and combat support operation. The primary Air Force Materiel Command component located at Holloman AFB is the 46th Test Group, which is responsible for evaluation of propulsion and navigational systems for aircraft, space vehicles and missiles. A variety of tenant organizations are assigned to Holloman AFB such as the German Air Force Tornado Squadron, the 4th Space Surveillance Squadron, and Detachment 4 of the 55th Weather Squadron. Figure 1, is a general map of the Base. Locations of SWMUs are identified on Figure 2.

C. HISTORY OF INVESTIGATION

At Holloman AFB, investigation and remediation of SWMUs is conducted under both the Air Force's Environmental Restoration Program (ERP) and the RCRA Corrective Action Program. The ERP program [formerly the Installation Restoration Program (IRP)] was initiated in 1983 and the RCRA Facility Assessment (RFA) was conducted in 1987. A HSWA permit was issued to Holloman AFB in 1991 and became effective on September 25, 1991.



BHATE
Environmental Engineers and Scientists

SITE LOCATION MAP

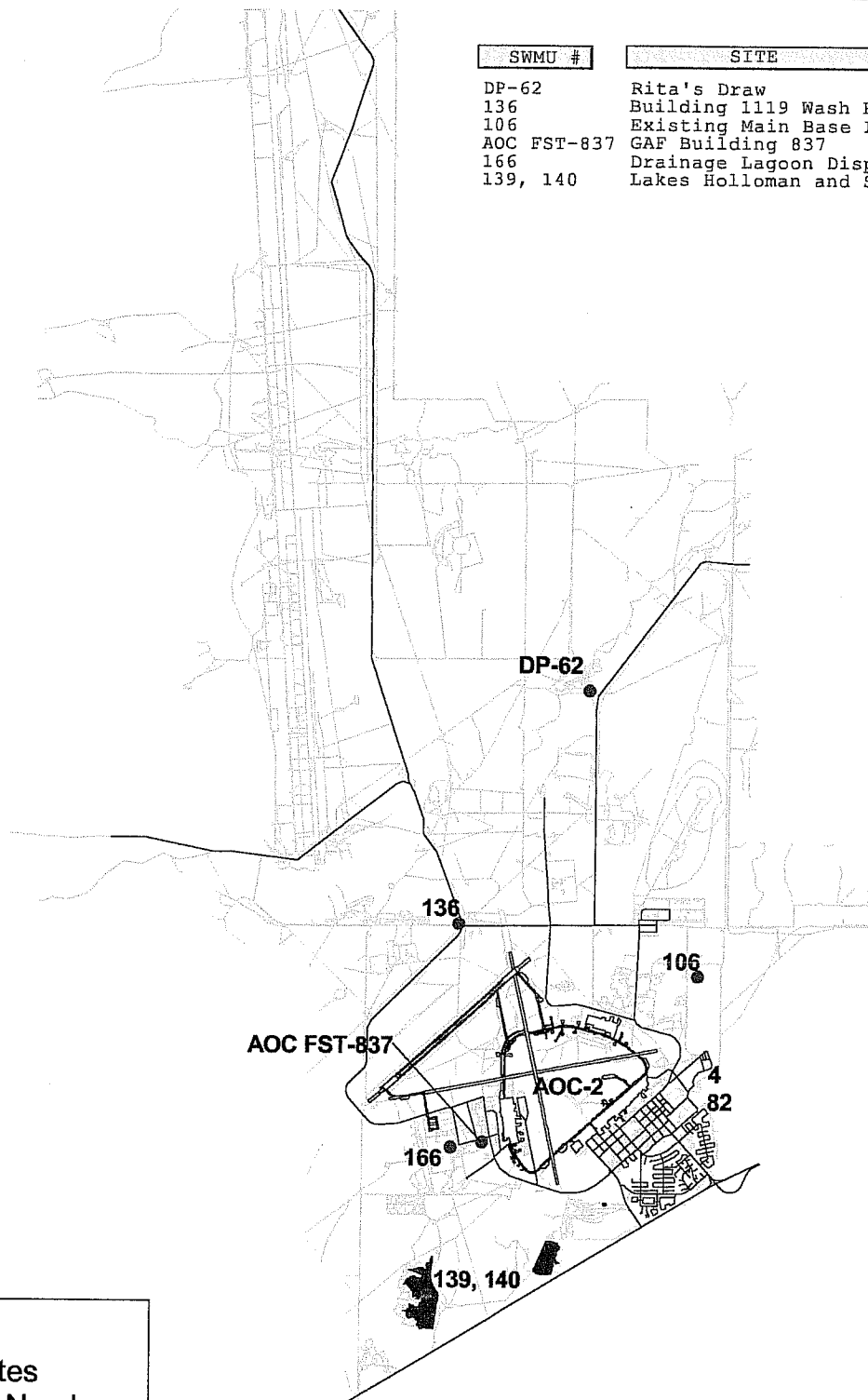
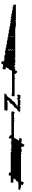
PROJECT NO.	SCALE	DATE	DRAWN BY:
9030167	SHOWN	10/26/04	CM
			DRAWING NO:
			GIS_FIG1

FIGURE 1

HOLLOMAN AFB
 NEW MEXICO

SWMU #	SITE
--------	------

DP-62	Rita's Draw
136	Building 1119 Wash Rack
106	Existing Main Base Landfill
AOC FST-837	GAF Building 837
166	Drainage Lagoon Disposal Site
139, 140	Lakes Holloman and Stinky



Legend

- ERP Sites
- 166 SWMU Numbers
- Water Bodies

10000 0 10000 Feet



SWMUs FOR NFA

PROJECT NO.	SCALE	DATE	DRAWN BY:
	1"=10,000'	4/14/05	cm
			DRAWING NO:
			GIS_2

Holloman AFB, New Mexico

Figure 2

The HSWA portion of the RCRA permit identified sites at the Base requiring a RCRA Facility Investigation (RFI). RFI activities were conducted in two phases. The Phase I RFI was conducted between 1987 and 1992. Phase II of the RFI was conducted between 1992 and 1995. A total of 236 potential SWMUs and 29 Areas of Concern (AOC) were investigated. Additionally, five remote sites such as radar sites, well fields and reservoirs were investigated under the RFI. A total of 265 sites were identified and investigated during this process. At the completion of the RFI and RFA processes and through the use of decision documents, only 119 SWMUs and AOCs remained on the RCRA permit.

In 1999, Holloman AFB submitted a request to remove 104 SWMUs and AOCs sites from the RCRA permit. In February 2000, NMED determined that 69 of the 104 SWMUs and AOCs would be considered appropriate for removal. A detailed document describing conditions at these sites and basis for removal was submitted to NMED in October 2000. In February 2001, NMED granted a Class III Permit Modification to remove 69 sites from the Base RCRA Permit.

Currently, a total of 64 SWMUs and AOCs remain of the Base RCRA permit. This document has been prepared to provide NMED with the basis for removing an additional 10 SWMUs and AOCs from the Base permit (Figure 2).

D. INVESTIGATION RESULTS

Since the removal of 69 sites in February 2001, additional sites have undergone remediation or corrective action as directed by NMED. At present, 10 sites have been identified for no further action (NFA). Section I of this document contains a brief description of each of each site, the actions performed, the basis for removal from the permit, and references concerning the site.

E. PERMIT MODIFICATION

The administrative record for this proposed action consists of a legal notice, fact sheet, the NMED statement of basis for removal, the request for Permit Modification, related correspondence, documents and the modified permit. The administrative record may be reviewed during normal business hours at:

Mr. John Kieling
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

(505) 428-2500

The legal notice, fact sheet, the NMED Statement of Basis, and modified permit may also be reviewed at:

Public Library of Alamogordo
2400 Scenic Drive
Alamogordo, New Mexico 883310

F. SELECTED REMEDY

The NMED determination that NFA is required at these SWMUs is based on sampling and analytical data, field surveys, documentation of remediation, historical records, aerial photographs, and employee interviews regarding operations at these sites. The determination for permit removal is based one or more of the following criteria:

- NFA Criterion 1: The SWMU/AOC cannot be located, does not exist or is a duplicate SWMU/AOC.
- NFA Criterion 2: The SWMU/AOC has never been used for the management (i.e. generation, treatment, storage and/or disposal) of RCRA solid waste or hazardous waste and/or constituents, or other Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances.
- NFA Criterion 3: No release to the environment has occurred or is likely to occur in the future from the SWMU/AOC
- NFA Criterion 4: A release from the SWMU/AOC to the environment has occurred, but the SWMU/AOC was characterized and/or remediated under another authority (such as the NMED Petroleum Storage Tank, Solid Waste, or Groundwater Quality Bureaus).
- NFA Criterion 5: The SWMU/AOC has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

Each site approved by NMED for NFA is summarized in Table 1.

TABLE 1.

**LIST OF SOILID WASTE MANAGEMENT UNITS (SWMUs)
Proposed No Further Action (NFA)
By Criteria
Holloman AFB, New Mexico**

SWMU No.	SWMU TITLE	ERP SITE No.	NFA CRITERIA No.
136	Building 1119 Washrack Drainage Pit	None	5
139 & 140	Lake Holloman and Lake Stinky	WP-49	5
166	MOBSS Drainage Lagoon	SD-25	5
AOC FST-837	German Air Force Building 837 & 839 Field Septic Tank	None	4
106	Main Base Landfill	LF-01	4
DP-62	Ritas Draw Debris Disposal Site	DP-62, AOC-Ritas Draw	5

G. PUBLIC PARTICIPATION

Requirements for public notification by the New Mexico Hazardous Waste Regulations include public notice in a local newspaper and sending notices to all persons on the facility mailing list maintained by the NMED. The notice announces the 60-day comment period for the request for permit modification. The notice indicates the date, time and place for a public meeting. Also, the notice will provide a contact person and address for submitting written comments on the permit modification. Upon review of the request for permit modification, a list of SWMUs that NMED deems appropriate for NFA must be published in a local newspaper and public notices must be sent to all persons on the facility mailing list. As part of this process, the public may make comments to and/or request additional information from NMED.

H. FURTHER STEPS

The public meeting will be scheduled and notices will be posted/published as indicated in section F. The NMED will notify all persons on the mailing list concerning the location, time and date of the public meeting and the contact person for public written comment. When the comment period has passed and the public meeting has been conducted, the NMED will notify Holloman AFB and each person on the public comment mailing list of the final decision. The final decision will become effective thirty (30) days after service of the decision, unless a later date is specified or review is requested in accordance with New Mexico Hazardous Waste Management Regulations, 20 NMAC 4.1, Section 901. E. *Hearings*.

I. CONTACT PERSON FOR ADDITIONAL INFORMATION

Ms. Pam Allen
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

(505) 428-2500

J. DESCRIPTIONS OF SWMUs PROPOSED FOR NO FURTHER ACTION

1.1 SWMU 136 Building 1119 Washrack Drainage Area

Location

SWMU 136 is a washrack drainage area located immediately south of Building 1119 (Figure 3).

History

Soil analyses performed at SWMU 136 during the Table 2 RFI identified two of six soil samples with TRPH greater than 1000 mg/Kg. VOCs, SVOCs and metals were detected but at levels below the SSLs

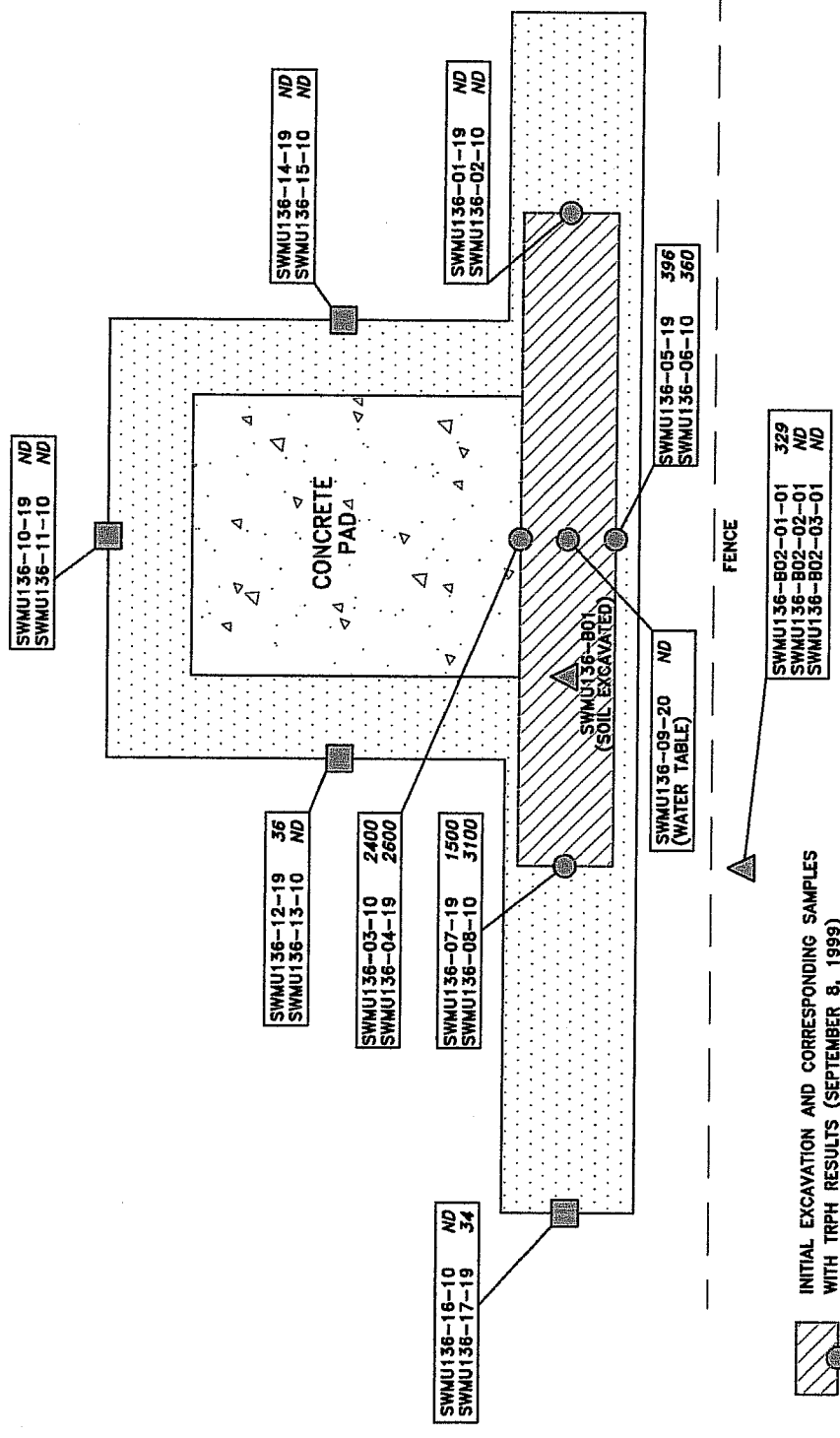
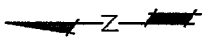
A bioventing remediation system was installed in the pit and operated from 1997 to mid 1999. The bioventing system removed all but the most recalcitrant hydrocarbons to below the remediation action level. In December 1999, the drainage pit was excavated to remove any remaining PCS from the pit area. A closure report summarizing these results was prepared and submitted in September 2000.

In January 2003, NMED requested that additional soil samples be collected from the southern wall of the drainage pit excavation and analyzed for petroleum hydrocarbons. The request was made to determine if any PCS remained in excess of NMED SSLs for Residential soil (TPH @ 940 mg/Kg). Analytical results from these soil samples did not exceed action levels. On September 22, 2003 NMED directed Holloman AFB to move the SWMU to Table A.2 of the Base RCRA permit (SWMUs requiring no further action). Figure 4 is a copy of this letter from NMED.

Evaluation of Relevant Information

A low flow air injection bioventing remediation system was installed in the pit and operated from 1997 to mid 1999. Despite, the operation of the bioventing system, some areas still contained TRPH above the action level.

In December 1999, the drainage pit was excavated to remove TRPH contaminated soil from the pit area. The completed excavation was approximately 12 feet wide, 30 feet long and approximately 20 feet deep. The excavated soil was field screened and segregated to minimize the volume for offsite disposal. The pit was excavated



SITE MAP OF SWMU 136 BUILDING 1119
WASHRACK DRAINAGE PIT

PROJECT NO.	SCALE	DATE	DRAWN BY:	DRAWING NO.
9030167	1"=8'	10/26/04	MRM	9030167-03

TABLE 2 RFI RESULTS (SEPTEMBER 1997)

NOTE: TRPH CONCENTRATIONS ARE SHOWN IN ITALICS.
CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM (mg/kg)

to groundwater which was encountered at approximately 20 feet below the ground surface (bgs).

Table 2 summarizes the analytical results from soil samples collected from the sidewalls of the drainage pit excavation. A closure soil sample was collected from the mid-point of each sidewall of the excavation. The closure samples were analyzed for TRPH, benzene, toluene, ethylbenzene and xylenes (BTEX). The highest TRPH concentration was identified in soil sample SWMU 136-12-19 at 36 mg/Kg. BTEX constituents were either not detected or quantified below the remediation action levels. A closure report summarizing these results was prepared and submitted in September 2000.

In January 2003, NMED requested that additional soil samples be collected from the southern wall of the drainage pit excavation. On March 19, 2003, a test pit was dug and three soil samples were collected and analyzed from the midpoint of the southern wall. The samples were selected from the most visibly stained and/or odor emitting intervals. These soil samples were analyzed for VOCs, SVOCs and TPH. TPH as gasoline, diesel fuel and motor oil were identified in the three samples ranging from 3.9 mg/Kg to 398 mg/Kg. Naphthalene at 10 µg/Kg was reported in one sample (SWMU 136-05-19). No other VOCs or SVOCs were detected in this sample or other samples. These analytical results were submitted to NMED on August 13, 2003. On September 22, 2003, NMED directed Holloman AFB to move the SWMU to Table A.2 of the Base RCRA permit (SWMUs requiring no further action).

Basis for Determination

SWMU 136 has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

All contaminated soil at the site has been excavated and transported to a TSD facility. Analytical results from soil samples collected from the side walls of the excavation document the appropriate removal of PCS.

References

- October 1994- Radian Corporation Draft Final Table 2 RCRA Facility Investigation Report.

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS
(Soil Remaining After Excavation)
SWMU-136 BUILDING 1119
BUILDING 1119
HOLLOMAN AFB, NEW MEXICO

Sample No. SWMU-136	Final POL Remediation Sampling Results														NMED SSLs Residential	mg/Kg
ANALYTICAL CONSTITUENTS	136 -01-19 19 Ft	136 -02-10 10 Ft	136 -12-19 19 Ft	136 -13-10 10 Ft	136 -10-19 19 Ft	136 -11-10 19 Ft	136 16-10 10 Ft	136- 17-19 19 Ft	136 05- 19 17 Ft	136 06- 10 20 Ft	136 03- 16 20.25 FT	136-B02 -01-01 0-2 Ft	136-B02 02-01 14-16 Ft	136-B02 -03-01 22-24 Ft		
PETROLEUM HYDROCARBONS Modified Method 8015 (µg/Kg)																
C6 to C10 (gasoline range)	-	-	-	-	-	-	-	-	<900	<900	<900	NA	NA	NA	940	
C10 to C22 (diesel range)	-	-	-	-	-	-	-	-	396,000	4,000	3,900	NA	NA	NA	940	
C22-C32 (motor oil range)	-	-	-	-	-	-	-	-	<3,600	6,600	5,300	NA	NA	NA	940	
TOTAL RECOVERABLE PETROLEUM HYDROCARBONS Method 418.1 (mg/Kg)																
	<10	<10	36	<10	<10	<10	<10	34	-	-	-	329	<34	<32	940	
VOGs by Method 8240µg/Kg																
Benzene	<5	<5	<5	<5	<5	<5	<5	<5	<0.39	<0.39	<0.39	<1.91	<2.07	<1.95	27	
Toluene	<5	<5	<5	<5	<5	<5	<5	<5	<0.42	<0.42	<0.42	<1.89	<2.04	<1.92	248	
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5	<5	<0.41	<0.41	<0.41	<2.02	<2.18	<2.05	1,060	
Xylenes	<15	<15	<15	<15	<15	<15	<15	<15	<0.8	<0.8	<0.8	<4.09	<4.43	<4.16	132	
SVOGs by Method 8270 µg/Kg																
Naphthalene	-	-	-	-	-	-	-	-	10	<5	<5	NA	NA	NA	71.9	

Note: All metals analysis performed on samples 135-B02-01-01, 135-B02-02-01 and 135-B02-03-01 were significantly less than the NMED SSLs (Residential)



BILL RICHARDSON
GOVERNOR

State of New Mexico
ENVIRONMENT DEPARTMENT
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Telephone (505) 428-2500
Fax (505) 428-2567
www.nmenv.state.nm.us



ROH CURRY
SECRETARY
DERWITT WATCHMAN-MOORE
DEPUTY SECRETARY

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

September 22, 2003

Mr. Howard Moffitt
Deputy Base Civil Engineer
49 CES/CIV
550 Tabosa Avenue
Holloman Air Force Base, NM 88330-8458

RE: REVIEW OF THE FINAL CLOSURE REPORT FOR SWMU 136 - BUILDING
1119 WASHRACK DRAINAGE PIT, OCTOBER 2001.
HOLLOMAN AIR FORCE BASE, EPA ID # NM6572124422-2
HFWB-HAFB 02-005

Dear Mr. Moffitt:

The Permits Management Program of the New Mexico Environment Department's Hazardous Waste Bureau has reviewed the Final Closure Report for SWMU 136 - Building 1119 Washrack Drainage Pit that Holloman Air Force Base (HAFB) submitted. Following review of the above document, and supporting documentation provided in the Hazardous and Solid Waste Amendment quarterly activity report submitted in June 2003, NMED has determined that SWMU 136 is appropriate for NFA.

Holloman Air Force Base is hereby advised to apply for a Class 3 Permit modification to remove SWMU 136 from the operating Permit thus moving it from Table A.1 (SWMUs that require further investigation) of the Annual Unit Audit to Table A.2 (SWMUs that require no further action).

Mr. Howard Moffitt
September 22, 2003
Page 2

If you have any questions or need any further information please contact me at 505-841-9488, or Robert Warder at the address above or by phone at 505-841-9040.

Sincerely,

Cornelius Amindyas
Project Leader
Holloman Air Force Base
CAA/rw

cc: John Kieling, NMED HWB
Will Mouts, NMED HWB
Robert Warder, P.E., NMED HWB
Steve Jetter, NMED HWB
James Harris, EPA Region 6 (6PD-N)
Debbie Hartsell, HAFB
Dan Holmquist, HAFB

File: Red HAFB 03, Reading File

BHATE
Environmental Engineers and Scientists

NFA LETTER FOR SWMU 136

PROJECT NO.	SCALE	DATE	DRAWN BY:
9030167	NTS	10/26/04	CM
DRAWING NO:			9030167-04

Figure 4

HOLLOMAN AIR FORCE BASE
NEW MEXICO

- September 2000 Foster-Wheeler Environmental Corporation Draft Final Closure Report for SWMU 136- Building 119 Washrack Drainage Pit SWMUs 39, 127, 139 at IRP Site FT-31 Holloman AFB, NM
- October 2001 Final Amended Closure Report SWMU 136- Building 119 Washrack Drainage Pit Holloman AFB, NM
- August 13, 2003 Correspondence. From 49 CES/CEV Holloman AFB, NM to Mr. Cornelius Amindyas NMED. Transmittal of additional soil sampling results and comment response.
- September 22, 2003 Correspondence. From Mr. Cornelius Amindyas NMED to 49 CES/CEV Holloman AFB. Review of the Final Closure Report for SWMU 136- Building 119 Washrack Drainage Pit, October 2001 Holloman AFB, NM

1.2 SWMUs 139 & 140 Lake Stinky and Lake Holloman

Location

SWMU 139 Lake Stinky and SWMU 140 Lake Holloman and the ditch from sewage lagoon G are located southwest of the Base sewage lagoons (Figure 5).

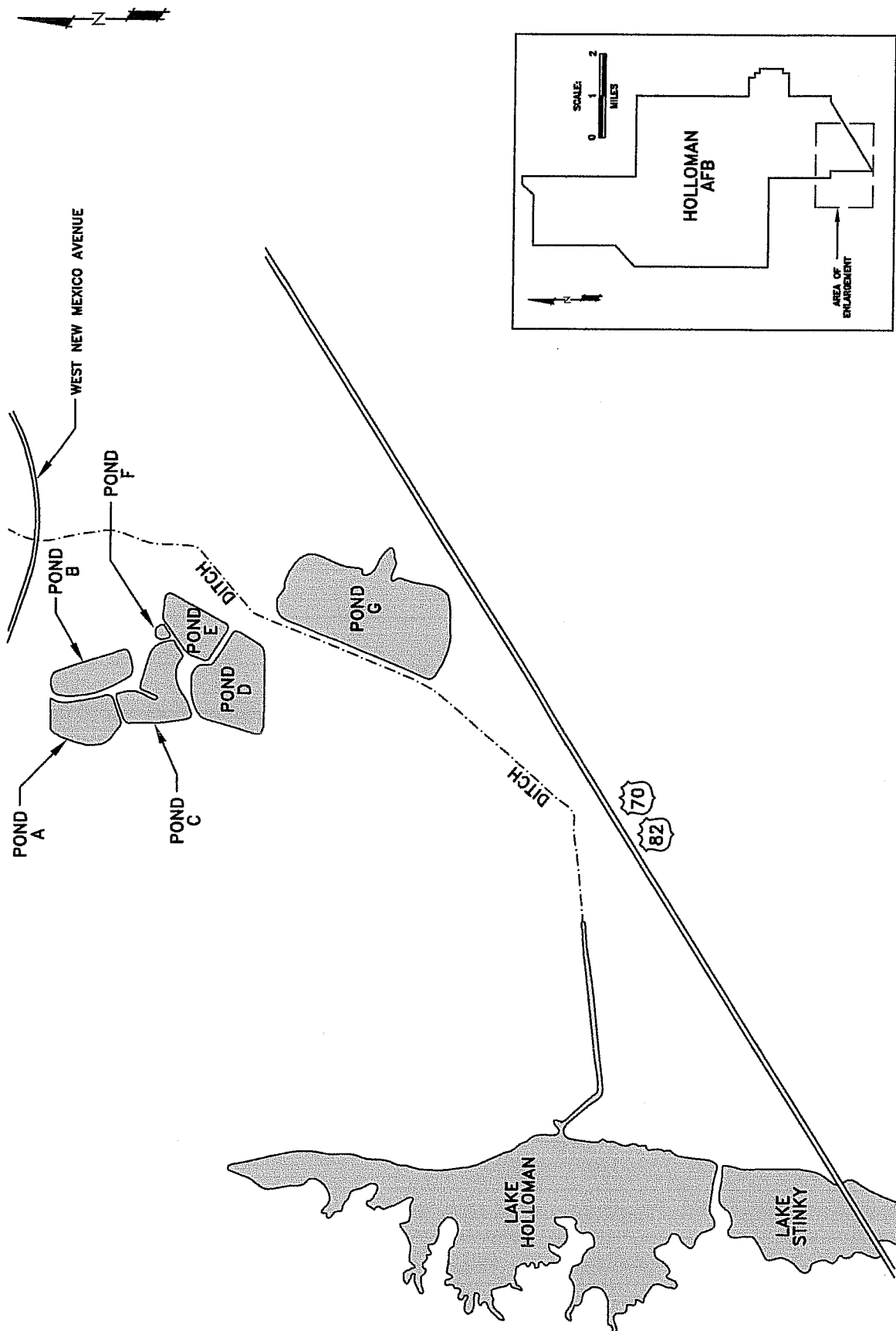
History

Lake Holloman (SWMU 140) was connected to seven aeration/evaporation lagoons (identified as lagoons A through G) which received approximately 1.3 million gallons of wastewater per day. Water that did not evaporate from the seven lagoons flowed from the lagoon G to Lake Holloman via an unlined ditch. In addition, Lake Holloman received runoff water from landscape irrigation, the golf course, and the runway approach area. During high water conditions, water from Lake Holloman discharges into Lake Stinky (SWUM 139). Both Lakes are unlined and water may either infiltrate to groundwater or evaporate depending upon seasonal conditions.

Several investigations were conducted between 1988 and 1995 to characterize soil, sludge and groundwater conditions within and immediately adjacent to the sewage lagoons (SWMUs 155, 156 & 184) including conditions at Lake Holloman and Lake Stinky. These investigations, the corrective measures study and risk assessments were used to develop a closure strategy for the lagoons along with Lakes Stinky and Holloman. These efforts concluded that while some pesticides and heavy metals were identified in sediments from some of the sewage lagoons, their concentrations did not pose a threat to human health and the environment. However, PCBs were detected in sludge from lagoons A and B. In 1992, an interim corrective action (IRA) was conducted to remove the PCB contaminated sludge from these lagoons.

In 1996 and 1997, the sewage lagoons were closed. The liquid was aerated and evaporated. The remaining sediment/sludge was capped and the area secured. A deed restriction has been placed on the site of the lagoons to limit future use. The biological risk assessment indicated that Lake Holloman, Lake Stinky and the ditch connecting them to the sewage lagoons did not require evacuation and capping. Further, the lakes could remain as wet areas for wildlife. Currently, the lakes have been designated as wildlife areas by the Base.

The NMED issued a NFA for the site on August 30, 2000. Figure 6 is a copy of the NFA letter from Mr. Cornelius Amindyas (NMED) to HAFB regarding the NFA status of the site.



**SWMUs 139 & 140 LAKES
HOLLOMAN AND STINKY**

PROJECT NO.	SCALE	DATE	DRAWN BY:	DRAWING NO:
9030167	1"=2,000'	10/26/04	MRM	9030167-05

Figure 5
HOLLOMAN AIR FORCE BASE
NEW MEXICO



GARY E. JOHNSON
GOVERNOR

State of New Mexico
ENVIRONMENT DEPARTMENT
Hazardous Waste Bureau
2044 A Galisteo, P.O. Box 26110
Santa Fe, New Mexico 87502-6110
Telephone (505) 827-1557
Fax (505) 827-1544



PETER MAGGIORE
SECRETARY

PAUL R. RITZMA
DEPUTY SECRETARY

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

August 30, 2000

Howard E. Moffitt
Deputy Base Civil Engineer
49 CES/CEV, 550 Tabosa Avenue
Holloman Air Force Base, NM 88330-8458

SUBJECT: APPROVAL OF NO FURTHER ACTION AT SWMUs 139 and 140
EPA ID No. NM6572124422
TASK NUMBER: HWB-HAFB-99-001

Dear Mr. Moffitt:

The Hazardous Waste Bureau (HWB) of the New Mexico Environment Department (NMED) has reviewed Holloman Air Force Base's (HAFB) 1997 document titled "Characterization Summary and No Further Action (NFA) Documentation for Solid Waste Management Units (SWMUs) 139 (Lake Holloman and the Ditch) and 140 (Lake Stinky), and the 1996 "Draft Final Risk Assessment Addendum for the Sewage Lagoons Closure Project".

Following review of the above documents, HWB has determined that both SWMUs 139 and 140 are appropriate for NFA. Based upon HWB's review of the ecological risk assessment, SWMUs 139 and 140 are eligible for NFA because of the following reasons:

- Ecological quotients modeled for the receptors and the lakes and ditch were less than one (<1.0) indicating low potential for ecological risk.

Mr. Howard Moffitt
August 30, 2000
Page 2 of 2

- The hotspot of DDT and its derivatives has been isolated from the lakes/wetlands system, which should lead to decreasing levels of these contaminants in the wildlife in the future (which would correspond to lower body burdens in receptors).
- There is potential for the remaining DDT to break down to less toxic constituents in a reasonable time frame at this site (the half life of DDT may be as short as 2 years in anoxic conditions, such as those at the bottom of the lakes).

Holloman Air Force Base is hereby advised to apply for a Class 3 Permit modification to remove SWMUs 139 and 140 from the operating Permit [thus moving them from Table A.1 (SWMUs that require further investigation) of the Annual Unit Audit to Table A.2 (SWMUs that require no further action)].

If you have any questions please contact Dr. Kirby Olson or me by telephone at (505) 827-1561 ext. 1034, and (505) 827-1561 ext. 1030, respectively, or at the above address.

Sincerely,

Cornelius A. Amindyas
Project Leader for Holloman Air Force Base
Hazardous Waste Bureau

cc: James P. Bearzi, Chief, HWB
Robert S. Dinwiddie, RCRA Adviser, HWB
Kirby Olson, Environmental Specialist, HWB
David Neleigh, Chief, EPA Region VI (6PD-N)
Allen Chang, EPA Region VI (6PD-N)
John Poland, Chief, Environmental Flight, HAFB
Jose Gallegos, HAFB
FILE: Red HAFB 00 and Reading

NFA LETTER FROM NMED FOR SWMUs
139 & 140

PROJECT NO.	SCALE	DATE	DRAWN BY:
9030167	NTS	10/26/04	CM
			DRAWING NO:
			9030167-11

Figure 6

HOLLOMAN AIR FORCE BASE
NEW MEXICO

BHATE
Environmental Engineers and Scientists

Evaluation of Relevant Information

Investigations of Lake Holloman and Lake Stinky and the associated sewage lagoons began in 1987. Between 1987 and 1993, approximately 11 groundwater monitoring wells were installed and sampled in the immediate area of Lakes Holloman and Stinky to characterize subsurface geology, hydrogeology and groundwater quality. These wells and associated soil borings were installed as part of the Phase 1 and Phase 2 RFI at the sewage lagoons and lakes.

In August 1992, a site characterization report was issued for the lagoons and lakes. The report summarized investigation activities in which soil, sediment, and groundwater samples were collected from the lakes and ditch. Analyses of these samples identified the presence of organochlorine pesticides and metal constituents at low concentrations

A phase 2 RFI report for Lakes Holloman and Stinky was produced in 1993. This investigation focused on the potential for migration of pesticides and metals detected in sediment and soil to groundwater. The investigation concluded that organochlorine pesticides were present at very low levels (less than 0.02 µg/L) and that metal constituents had not impacted the groundwater.

In 1993, the Base issued a risk assessment for both the sewage lagoons and the lakes. Separate risk assessments were conducted at the lagoons and lakes and the results suggested several constituents that may pose a threat to human health and the environment. In 1994, however, a revised risk assessment determined that the hazardous constituents that were identified in the 1993 risk assessment were not present in the lakes. Further, the 1994 revision concluded that metal species of concern were present at concentrations below background levels.

A survey of biota, pore water and sediment at the lakes was conducted in 1994. The investigation included the analysis of tissues from biota. A draft report was issued that indicated low concentrations of pesticide constituents and metals were present in tissue and sediments. However, the investigation did not indicate that constituents present in sediments were available for uptake by biota. A final document was not produced.

A technical memorandum was issued in 1994 to summarize the status of investigations and present the results of the investigation and risk assessment in a concise manner. The report identified the decrease in organochlorine pesticides at several sampling stations between the 1992 and 1994 sampling events. The report concluded that neither pesticides nor metals exceeded reporting limits at Lakes Stinky or Holloman.

An addendum risk assessment was presented in 1996. The purpose of the assessment was to re-evaluate the data from the 1994 phase 2 RFI. The report concluded that no threat to human health and the environment exists from either Lake Stinky or Lake Holloman. The only potential pathway for DDD, DDE and DDT was identified in one biological sample (mosquito fish) from the ditch connecting lagoon G to Lake Holloman.

In 1996, a biological resource survey was conducted at the sewage lagoons and lakes. The report identified existing flora and fauna that both benefit from the lakes and might be harmed from any residual pesticides. The report concluded that draining and closing the lakes would cause much more harm to the wildlife than retaining them without further actions.

In 1997, a SWMU close-out report was issued for Lakes Holloman and Stinky. The report summarized all the previous investigations and actions performed for the lakes. The report recommended that no further action (NFA) be performed at these SWMUs. In August 2000, NMED issued an approval for NFA for SWMUs 139 and 140 to Holloman AFB (Figure 6). The NFA approval was based on:

1. Ecological quotients modeled were less than 1 indicating low potential ecological risk.
2. Sources of pesticides and metals had been isolated from the lakes by the closure of the sewage lagoons and that future wildlife will be exposed to less body burden.
3. Any remaining DDT will degrade in the environment in approximately 2 years.

Basis for Determination

SWMUs 139 and 140 have been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

References

- 1993 Risk Assessment for the Sewage Lagoon System, Radian Corporation.
- 1992 Site Characterization Report – Sewage Lagoon Investigation, Radian Corporation.
- 1993 Draft Final Phase 2 RFI for Lakes Holloman and Stinky, Radian Corporation
- 1993 Risk Assessment for the Sewage Lagoon System, Radian Corporation.
- 1994 Preliminary Survey of Contaminants Present in Biota, Pore-water and Sediments at HOLLOMAN AFB WWTF, Wildlife Service and US Fish.

- 1995 Technical Memorandum 1994 Site Investigation Lake Holloman, Lake Stinky and the Ditch, Ebasco Corporation and Radian Corporation.
- 1996 Biological Resources Report, Sewage Lagoons Closure Project, Holloman AFB, NM. Foster-Wheeler Environmental Corporation and Radian Corporation.
- 1996 Risk Assessment Addendum, Sewage Lagoons Closure Project, Holloman AFB, NM, Radian Corporation and Foster-Wheeler Environmental Corporation.
- 1997 Site Close-out Report SWMU 139 and 140 Holloman AFB, NM, Foster-Wheeler Environmental Corporation.
- August 30, 2000- Correspondence. From Mr. Cornelius Amindyas NMED to 49 CES/CEV Holloman AFB. Approval of No Further Action at SWMUs 139 and 140 Holloman AFB, NM

SWMU 166 MOBSS Drainage Lagoon (ERP Site SD-25)

Location

SWMU 166 (ERP Site SD-25) is a drainage lagoon located at the staging area of the Mobile Support Squadron (MOBSS) and is located in the extreme southwestern portion of the Base (Figure 7).

History

SWMU 166 is a drainage lagoon located at the MOBSS facility [currently known as the Bare Base Mobility Squadron (BBMS)]. The lagoon is a converted stock pond, approximately 50 feet square and 5 feet deep. Dikes that extend up to 6 feet above the local grade achieve the depth. During heavy precipitation, the lagoon receives runoff from the staging area via two unlined drainage ditches. During times of drought, water in the lagoon is completely evaporated.

Initial restoration program record searches for the site concluded that the site posed minimal environmental harm because there was no evidence of contamination. However, the potential could exist for impact to the site by chemicals such as pesticides, disinfectants, and solvents from activities conducted in the BBMS staging area.

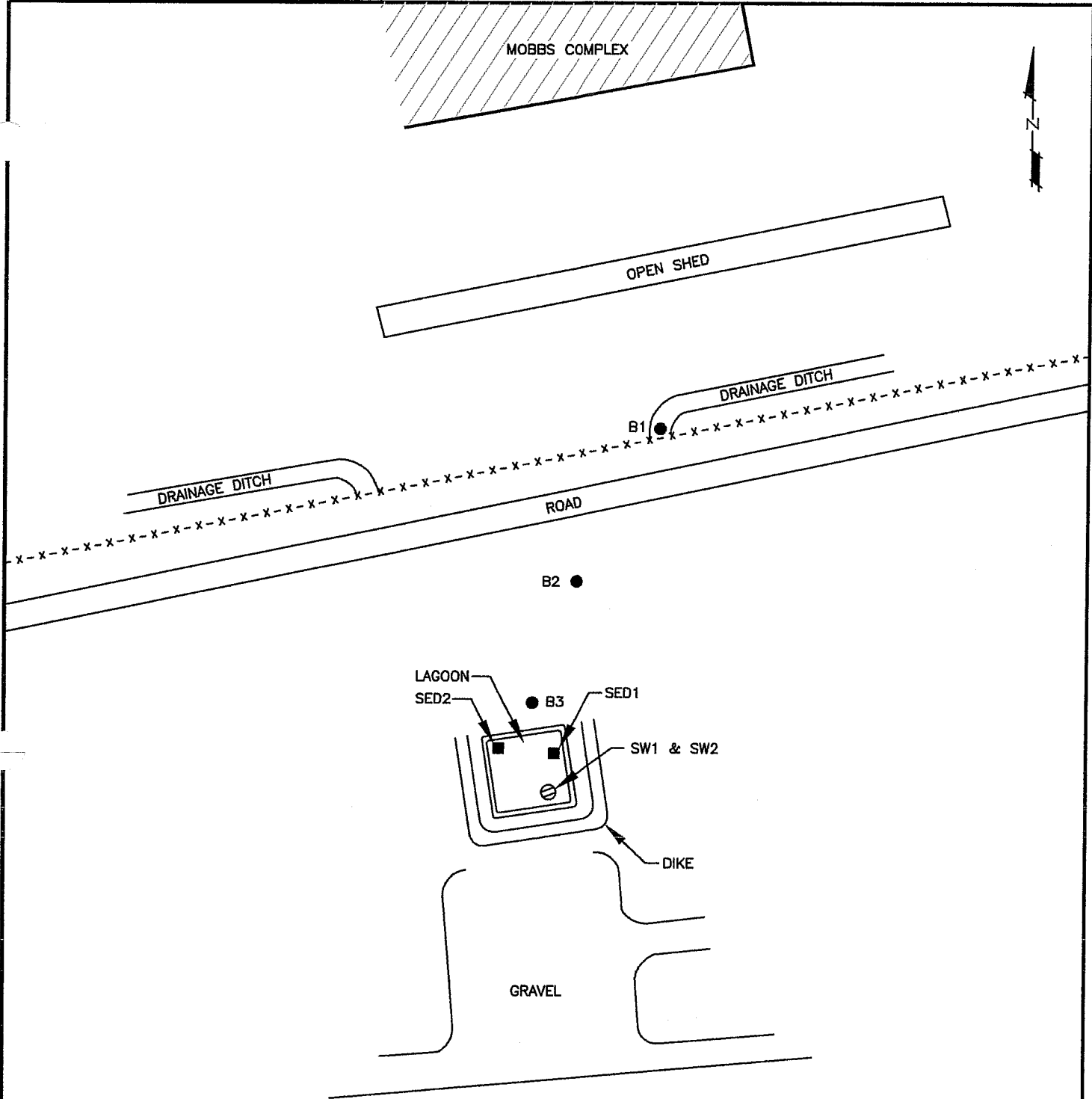
A site investigation was conducted in 1983. The inspection did not reveal any visual signs of contamination, however, three 55-gallon drums of unknown content were found next to the lagoon. Based upon the potential for contamination in runoff from the staging area, and the drums, a RI was conducted at SWMU 166.

The RI was conducted between January 1988 and June 1989. The RI investigation involved the collection and laboratory analysis of soil, sediment and surface water samples. Analytical results from soil, sediment and surface water did contain contaminants in excess of regulatory standards.

In 1990, a baseline risk assessment was conducted at the site. The risk assessment concluded the site posed no threat to public health or the environment.

Evaluation of Relevant Information

Tables 3 and 4 summarize the soil, sediment and surface water sample analytical results from investigations conducted at this site. The RI conducted at the site included the collection, field screening and the selection of samples for laboratory analysis. Three soil samples were selected for analysis. Toluene, ethylbenzene



LEGEND:

- SOIL BORING
- SEDIMENT LOCATION
- ⊙ SURFACE WATER SAMPLE
- UNIMPROVED ROAD
- x-x-x- FENCE

**SWMU 166 MOBBS
DRAINAGE LAGOON**

BHATE
Environmental Engineers and Scientists

PROJECT NO.	SCALE	DATE	DRAWN BY:
9030167	1"=50'	5/31/05	MRM
			DRAWING NO:
			9030167-12

Figure 7

**HOLLOMAN AIR FORCE BASE
NEW MEXICO**

TABLE 3
SUMMARY OF SOIL AND SEDIMENT SAMPLE ANALYTICAL RESULTS
SWMU-166
(ERP Site SD-25)
HOLLOMAN AFB, NEW MEXICO

ANALYTICAL CONSTITUENTS	1989 RI REPORT SOIL & SEDIMENT SAMPLING RESULTS					NMED SSLs Residential (mg/Kg)
	Soil Samples			Sediment Samples		
	B1	B2	B3	SED 1	SED 2	
TRPH by Method 418.1 µg/Kg						
	52	35	21	31	48	940
VOCs by Method 8240 µg/Kg						
Toluene	7	ND	ND	ND	ND	248
Ethylbenzene	7	ND	ND	ND	ND	1,060
Xylenes	28	ND	ND	ND	ND	132
SVOCs by Method 8270 µg/Kg						
All SVOC Constituents	ND	ND	ND	ND	ND	0
TAL Metals by Methods 600/7000s mg/Kg						
Arsenic	1.5	2.2	2	ND	2.3	3.9
Barium	58	109	121	92	101	5,450
Beryllium	1.8	1.8	1.7	1.7	1.9	156
Cadmium	ND	ND	1.3	7.6	ND	74
Chromium	8	19	21	14	18	10,000
Copper	33	31	36	36	44	3,130
Iron	5,573	17,042	18,692	11,595	14,920	2,350
Lead	3	6	70	4	5	400
Manganese	95	399	436	273	320	1,550
Nickel	12	20	24	14	14	1,560
Sodium	2,069	2,730	2,718	664	860	No Value
Zinc	22	60	68	42	53	2,350

NOTES: Bold values exceed NMED Residential SSLs.

TABLE 4
SUMMARY OF SURFACE WATER ANALYTICAL RESULTS
SWMU-166
 (ERP Site SD-25)
 HOLLOMAN AFB, NEW MEXICO

ANALYTICAL CONSTITUENTS	Surface Water Sample		NMWQCC ⁽¹⁾ or Federal Standards
	SW1	SW2 SW2	
TRPH by Method 418.1mg/L			
	ND	ND	-
VOCs by Method 8240 µg/L			
All Constituents	ND	ND	-
Pesticides & PCBs Method 8080 µg/L			
All Constiutents	ND	ND	-
Metals by Methods 600/7000s µg/L			
Arsenic	ND	ND	15
Barium	50	46	2000
Cadmium	ND	ND	5
Chromium	ND	ND	100
Iron	100	170	1,000
Lead	ND	ND	15
Manganese	ND	ND	200
Selenium	ND	ND	50
Silver	ND	8	100

1. NMWQCC - New Mexico Water Quality Control Commission
 Federal Standards - USEPA Drinking Water Standards

and xylene were detected in one soil sample with maximum concentrations of 7 µg/Kg, 7 µg/Kg and 28 µg/Kg respectively. No other VOCs, SVOCs, PCBs or pesticides were detected in the soil samples. TRPH was identified in all three samples at concentrations ranging between 21 mg/Kg and 52 mg/Kg. The maximum concentrations of RCRA metals included arsenic (2 mg/Kg), barium (121 mg/Kg), cadmium (1.3 mg/Kg), chromium (21 mg/Kg), mercury (ND), lead (70 mg/Kg), selenium (ND) and silver (ND).

Two sediment samples were collected from the bottom of the lagoon. Analytical results from these samples did not identify the presence of VOCs, SVOCs, pesticides or PCBs. TRPH was identified in concentrations ranging between 31 mg/Kg and 90 mg/Kg. The maximum concentrations of RCRA metals detected were arsenic (2.3 mg/Kg), barium (108 mg/Kg), cadmium (1.3 mg/Kg), chromium (18 mg/Kg), mercury (ND), lead (70 mg/Kg), selenium (ND) and silver (ND).

Two surface water samples were collected from the lagoon at different locations. Analytical results from these samples identified no VOCs, SVOCs, PCBs, pesticides, or TRPH. The maximum concentrations of RCRA metals included barium at 50 µg/L. No other metals were detected in the surface water samples.

The concentration of TRPH and petroleum related VOCs (ethylbenzene, toluene and xylenes) are at least two orders of magnitude lower than the NMED SSLs for residential soils. Water samples analyzed from this site only contained detectable concentrations of barium which were significantly less than the NMWQCC or federal standards. Only iron with concentrations ranging between 5,573 mg/Kg and 18,692 mg/Kg exceed the NMED Residential Soil SSL (2,300 mg/Kg).

Basis for Determination

SWMU 166 has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

References

- 1990 Remedial Investigation Report, Installation Restoration Program, Holloman AFB, NM Volume 1, Walk Haydel & Associates, Inc.
- 1989 Remedial Investigation Risk Assessment Report, Installation Restoration Program, Holloman AFB, NM, Walk Haydel & Associates, Inc.

1.3 AOC FST-837 German Air Force Building 837 OWS

Location

AOC FST-837 is located between buildings 837 and 839 at the site of the Petroleum Materials Evaluation Laboratory (PMEL). Currently, these buildings are operated by the First German Air Force (Figure 8).

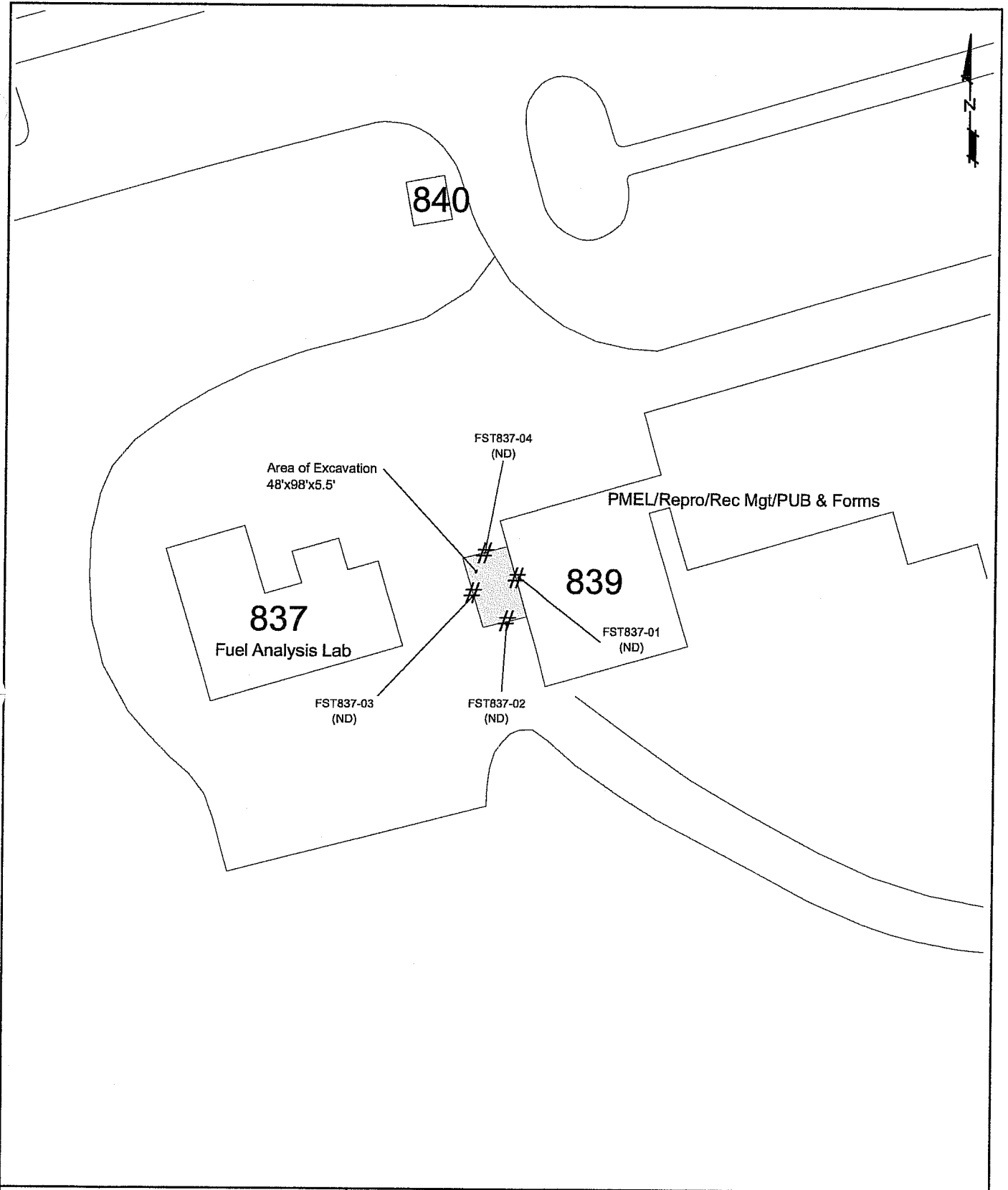
History

Site AOC FST-837 was a buried and unknown field septic tank (FST) that had not been included in the Base RCRA permit. The septic tank and leach field were discovered during excavation for the construction of Building 839. NMED was notified about the presence of the FST and it was added to the facilities SWMU list as site AOC FST-837. A portion of building 837 had operated as a fuel testing laboratory. Rinseate from fuel sample testing may have entered the drains connected to AOC FST-837.

AOC FST-837 was remediated under the NMED voluntary corrective action (VCA) program. The septic tank, surrounding soil and leach line were excavated and disposed offsite. Soil samples were collected from the completed excavation to document remediation to below the action level for the Base. The demolition, excavation, disposal and closure sampling activities were documented in a VCA completion report and submitted to NMED on June 9, 2000. On June 2, 2003 the base received an approval for the completed VCA of AOC FST-837. Figure 9 is a copy of the approval letter.

Evaluation of Relevant Information

Remediation activities for this site were conducted in accordance with NMED VCA guidelines and documented in the VCA completion report. The four (4) closure soil samples collected from the 48 feet wide by 98 feet long and 5-feet deep excavation indicated that no petroleum hydrocarbons or petroleum hydrocarbon constituents were present along the walls of the excavation above the NMED Residential SSLs. All samples report TPH GRO < 5 mg/Kg, TPH DRO < 10 mg/Kg and no detectable VOCs. Additionally, analysis of soil samples collected from the excavated and stockpiled soil did not identify any RCRA hazardous constituents. Further, no phase separated hydrocarbons were observed in groundwater at the bottom of the excavation.



**SITE MAP OF AOC-FST-837
GERMAN AIR FORCE BUILDING 837**

PROJECT NO.	SCALE	DATE	DRAWN BY:
9030167	1=40'	5/20/05	CM/MRM
			DRAWING NO: GIS_FIG8

FIGURE 8
HOLLOMAN AFB
NEW MEXICO



BILL RICHARDSON
GOVERNOR

State of New Mexico
ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Telephone (505) 428-2500
Fax (505) 428-2567
www.nmenv.state.nm.us



RON CURRY
SECRETARY

DERRITH WATCHMAN-MOORE
DEPUTY SECRETARY

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

June 02, 2003

Mr. Howard Moffitt
Deputy Base Civil Engineer
49 CES/CIV
550 Tabosa Avenue
Holloman Air Force Base, NM 88330-8458

**RE: VOLUNTARY CORRECTIVE ACTION COMPLETION REPORT FOR THE
GERMAN AIR FORCE II PROJECT, JUNE 9, 2000.
HOLLOMAN AIR FORCE BASE, EPA ID # NM6572124422
HWB-HAFB 00-005**

Dear Mr. Moffitt:

The Hazardous Waste Bureau (HWB) of the New Mexico Environment Department (NMED) has reviewed the above document regarding the Voluntary Corrective Action completion report for the German Air Force II construction project. On May 19, 2003, NMED received satisfactory responses to the Request for Supplementary Information (RSI) NMED submitted to Holloman Air Force Base on April 30, 2003. NMED hereby grants approval of the Voluntary Corrective Action.

If you have any questions or need any further information please contact me, or Robert Warder at the address above or by phone at 505-841-9040.

Mr. Howard Moffitt
June 02, 2003
Page 2

Sincerely,

Cornelius Amindyas
Project Leader
Holloman Air Force Base
CAA/tw

cc: John Kieling, NMED HWB
Robert Warder, PE, NMED HWB
Debbie Hartell, HAFB
Dan Holmquist, HAFB

File: Red HAFB 03, Reading File

BHATE
Environmental Engineers and Scientists

NFA LETTER FROM NMED FOR AOC-FST837

PROJECT NO.	SCALE	DATE	DRAWN BY:
9030167	NTS	10/26/04	CM
			DRAWING NO: 9030167-07

Figure 9

**HOLLOMAN AIR FORCE BASE
NEW MEXICO**

Basis for Determination

AOC FST-837 has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

References

- | | |
|----------------|---|
| June 2000, | Voluntary Corrective Action Completion Report for the German Air Force Base Project (AOC FST-837) Holloman AFB, Foster Wheeler Environmental Corporation |
| April 30, 2003 | Correspondence. From Mr. Cornelius Amindyas NMED to 49 CES/CEV Holloman AFB. Request for Supplemental Information Completion Report for the German Air Force II Project (AOC FST-837) |
| June 2, 2003 | Correspondence. From Mr. Cornelius Amindyas NMED to 49 CES/CEV Holloman AFB. Approval of VCA at AOC FST-837 Holloman AFB, NM |

1.4 SWMU 106 Main Base Landfill (ERP Site LF-01)

Location

The Main Base Landfill (ERP Site LF-01) occupies approximately 210 acres and is located north of the main Base area along the north Base boundary (Figure 10).

History

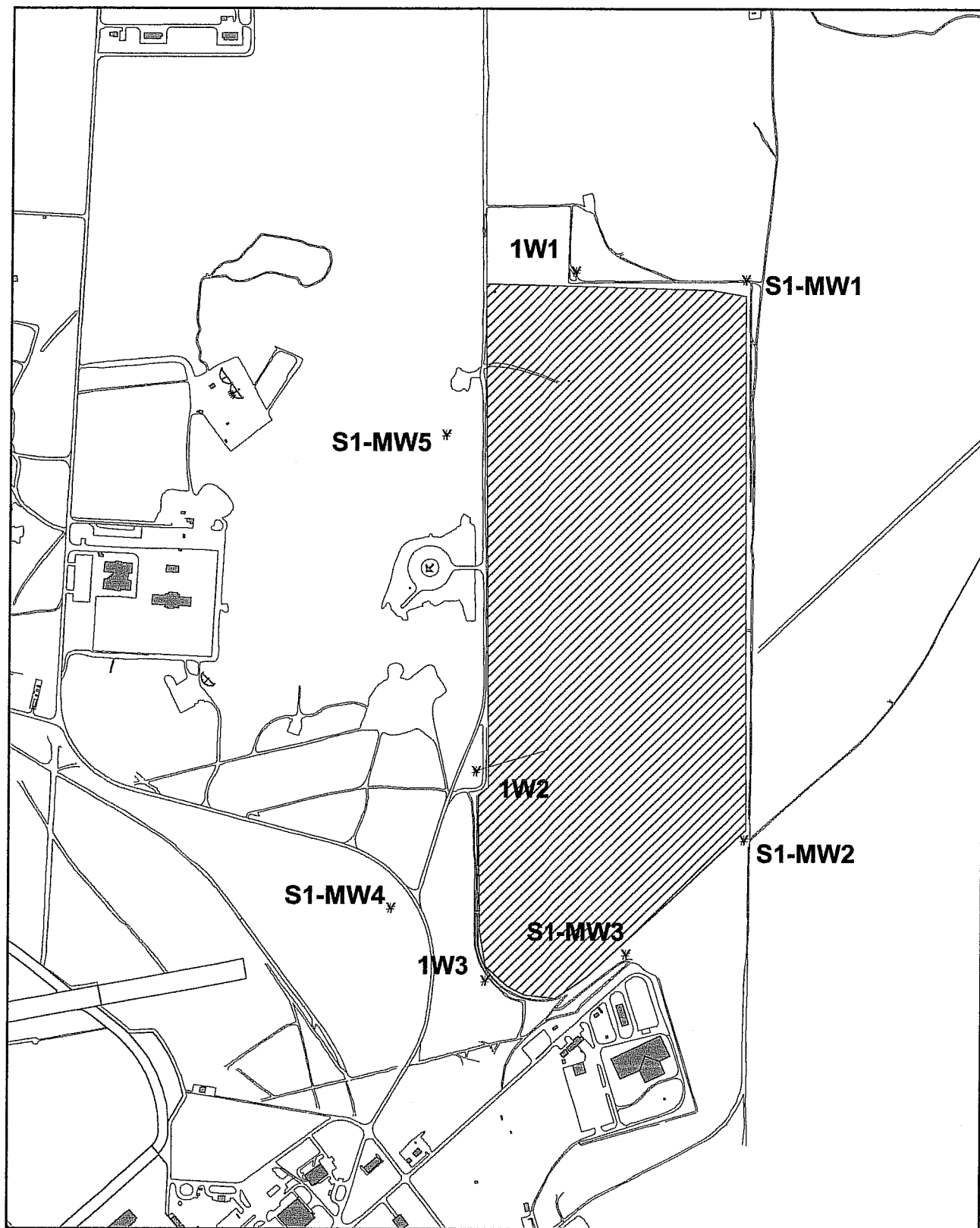
The Main Base Landfill accepted solid waste from the all facilities at the Base from 1958 to 1994. The landfill used the trench and fill method. When operating, the active areas were generally limited to a trench approximately 150 feet wide, 300 feet long and 30 feet deep.

According to information from a records search and interviews conducted during the 1988 to 1990 Phase I IRP Investigation, the landfill may have accepted small quantities of hazardous wastes such as oils, solvents and pesticides.

Soil borings and groundwater monitoring wells (MW-1 through MW-5, IW-1, IW-2 and IW-3) were drilled and installed along the perimeter of the landfill during the Phase II IRP Investigation. Soil samples collected from the borings were used for stratigraphic characterization only. No laboratory analysis for hazardous constituents was performed. Six undisturbed soil samples of the landfill cap material were analyzed for permeability.

Groundwater samples collected from the monitoring wells were analyzed for metals, TRPH, VOCs, SVOCs, anions and TDS. A summary of the maximum concentrations of each detected analyte during the investigation phase and during 10 years of LTM are presented in Table 5. The groundwater analytical results identified VOCs benzene, toluene, xylenes, 1, 2-dichloroethane and SVOCs bis-2-ethylhexylphthalate and di-n-octylphthalate in at least one well. No TRPH, pesticides and PCBs were detected in samples from the eight monitoring wells. TDS in the samples from the eight monitoring wells ranged from 18,318 mg/L to 67,621 mg/L.

In 1995, the long-term groundwater monitoring (LTM) program (10 years) was initiated at SWMU 106. Five of the eight wells on site were sampled for RCRA metals, VOCs and organochlorine pesticides. In subsequent LTM events, constituents not identified in the previous two sampling rounds (such as organochlorine pesticides) were dropped from the analytical regiment. The LTM program at SWUM 106 was completed with the 2003 LTM sampling event.



BHATE
Environmental Engineers and Scientists

**SITE MAP OF SWMU 106
MAIN BASE LANDFILL**

PROJECT NO.	SCALE	DATE	DRAWN BY:
9030167	1"=100'	5/20/05	CM/MRM
			DRAWING NO: GIS_FIG10

FIGURE 10
HOLLOMAN AFB
NEW MEXICO

TABLE 5
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
SWMU 106
MAIN BASE LANDFILL LF-01
HOLLOMAN AFB, NEW MEXICO

ANALYTICAL CONSTITUENTS	RI Report (j1989) Sample No. and Location	Maxium Reported Result	Long Term Monitoring Well No.	Maximum Reported Result During 10 years of Long Term Monitoring	NMWQCC or Federal Standards
TDS by Method 160.1 mg/L					mg/L
TDS	MW-1	67,621	S1-MW2	44400 ⁽¹⁾	10,000
VOCs by Method 8240 and 8260 µg/L					µg/L
Benzene	MW-3	82	All Wells	ND	5
1,2-Dichloroethane	MW-3	9	All Wells	ND	5
Ethylbenzene	All Wells	ND	All Wells	ND	700
Toluene	MW-1	49	All Wells	ND	1000
xylene	MW-3	85	All Wells	ND	10,000
SVOCs Method 8270 µg/L					µg/L
Bis(2-ethylhexylphthalate)	IW-3	73	Not Sampled	NA	NA
Di-n-octylphthalate	IW-1	14	Not Sampled	NA	NA
Organochlorine Pesticides Method 8080 & 8081 µg/L					µg/L
All Constituents	All Wells	ND	All Wells	ND	NA
Metals by Methods 600/7000s µg/L					µg/L
Antimony	All Wells	43	All Wells	ND	6
Arsenic	IW-1	3.6	S1-MW2	27	15
Barium	MW-5	285	IW2	12	2000
Beryllium	MW-5	3	All Wells	ND	4
Cadmium	All Wells	<76.2	All Wells	ND	5
Chromium	MW-5	84	S1-MW5	3	100
Copper	MW-5	29	All Wells	ND	1,300
Iron	MW-5	38,345	All Wells	NA	1,000
Lead	All Wells	NA	S1-MW5	44	15
Manganese	MW-5	872	S1-MW1	115	200
Mercury	All Wells	<0.2	All Wells	ND	2
Selenium	MW-2	3.7	S1-MW5	27	50
Silver	MW-5	27	S1-MW1	1	100
Sodium	MW-3	39,625,700	All Wells	NA	None
Thallium	IW-1	5.8	All Wells	NA	None
Zinc	MW-5	166	All Wells	NA	10,000

NOTES:

Bold Values= Indicates that reported result exceeds NMWQCC or federal standards

ND= Not Detected

NA= Not Analyzed

1 TDS Value from Quarter 4, 2002 LTM Groundwater Quality Evaluation,
Holloman AFB, NM Tetrtech FW, January 2004

During the 10 years of LTM only two constituents, arsenic (maximum concentration of 27 µg/L) and Lead (maximum concentration of 44 µg/L) exceed state and federal standards. Further, the groundwater at this exceeds the NMWQQ for TDS with a maximum concentration of 44,400 mg/L observed at well S1-MW2.

An engineered cap was installed over SWMU 106 in 1998. The cap prevents the potential infiltration of moisture to the deposited waste. Routine maintenance of the cap and a methane monitoring program has been implemented under the direction of the NMED Solid Waste Bureau. The New Mexico Solid Waste Bureau issued closure certification for the landfill in December 1999.

Evaluation of Relevant Information

Soil borings were installed during the monitoring well installation portion of the investigation at SWMU 106. In 1990, undisturbed soil samples were collected of the non-engineered soil cap. Soil analysis indicated that permeability of the cap material ranges from 1×10^{-3} cm/sec to 1×10^{-6} cm/sec which is an order of magnitude greater than typical cap material. Soil samples from the borings drilled for groundwater monitoring wells indicated that subsurface sediments surrounding the landfill are comprised of clayey silt (ML), clayey sand (SC), and silty sand (SM).

The initial groundwater analytical results (RI Report) identified the maximum concentrations of VOCs benzene (82 µg/L at MW-3), toluene (49 µg/L at MW-1), xylenes (85 µg/L at MW-3), 1,2-dichloroethane (9 µg/L at MW-3) and SVOCs bis-2-ethylhexylphthalate (73 µg/L at IW-3) and di-n-octylphthalate (27 µg/L at IW-1). The majority of these constituents were identified in one well, MW-3. No TRPH, pesticides and PCBs were detected in samples from the eight monitoring wells. TDS in the samples from the eight monitoring wells ranged from 18,318 mg/L (IW-1) to 67,621 mg/L (MW-1). The maximum concentrations of RCRA metals included arsenic (3.6 µg/L), barium (285 µg/L), cadmium (ND), chromium (84 µg/L), mercury (ND), selenium (3.7 µg/L) and silver (27 µg/L). The samples were not analyzed for lead.

Five rounds of LTM were conducted at the site from 1995 to 2003. During these sampling events conducted in 1995, 1997, 1999, 2001 and 2003, no VOCs or organochlorine pesticides were identified in groundwater. Only two metal species, arsenic and selenium have been detected in groundwater samples. No RCRA metals species exceed the New Mexico Water Quality Control Commission (NMWQCC) or federal standards. Further, TDS at the site exceeds 10,000 mg/L which defines regulated water under the NMWQCC regulations.

An engineered cap was installed over SWMU 106 in 1998. The cap prevents the potential infiltration of moisture to the deposited waste. Routine maintenance of the cap and a methane monitoring program has been implemented under the direction of the NMED Solid Waste Bureau. The NMED Solid Waste Bureau issued closure certification for the landfill in December 1999. Figure 11 is a copy of the approval letter for the closure design at LF01. Figure 12 is a copy of the letter from NMED determining that closure of the landfill was complete.

Basis for Determination

A release from the SWMU 106 to the environment has occurred, but the SWMU/AOC was characterized and/or remediated under another authority (such as the NMED Petroleum Storage Tank, Solid Waste, or Groundwater Quality Bureaus).

References

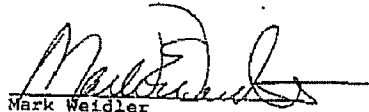
- 1990 Walk Haydel & Associates, Inc., Remedial Investigation Report, Installation Restoration Program, Holloman AFB, NM Volume 1
- 1989 Walk Haydel & Associates, Inc., Remedial Investigation Risk Assessment Report, Installation Restoration Program, Holloman AFB, NM
- 1995 Groundwater Technology Government Services, Inc. and Foster Wheeler Environmental Corporation, Long Term Groundwater Monitoring Program Volume I Field Sampling Program
- 1999 Foster Wheeler Environmental Corporation, Closure Report for Main Base Landfill Holloman AFB
- 2003 US Army Corps of Engineers, Omaha District, 2003 Long-Term Groundwater Monitoring Report Holloman Air Force Base, New Mexico
- Correspondence. From Mr. Butch Tongate NMED Solid Waste Bureau to 49 CES/CEV Holloman AFB, Approval of Landfill Capping and Closure.

HOLLOMAN AFB MAIN BASE LANDFILL
CLOSURE AND POST-CLOSURE CARE PLAN

Owner: U.S. Air Force
Operator: U.S. Air Force
Facility: Municipal Landfill, 125 Acres
Location: T17S, R8E, Sections 1 & 12

Pursuant to Section 501, and Section 502 of the New Mexico Solid Waste Management Regulations (20 NMAC 9.1), and after providing Public Notice in accordance with Section 501.G; the New Mexico Environment Department (NMED) hereby approves the Closure and Post-Closure Care Plan of the aforementioned facility, received June 1997, subject to the following conditions:

1. Within 30 days of approval, the U.S. Air Force shall submit to the NMED a revised closure schedule indicating when funding will be secured.
2. Within 30 days of closure, the U.S. Air Force shall record a notation on the deed to the landfill property, or some other instrument that is normally examined during title search that the land was used as a landfill and its use is restricted under the post-closure care requirements; place a copy in the operating record; and provide a copy to the NMED.


Mark Weidler
Secretary

1/5/98
Approval date



GARY F. JOHNSON
Governor

State of New Mexico
ENVIRONMENT DEPARTMENT
Harold Runnels Building
1190 St. Francis Drive, P.O. Box 26110
Santa Fe, New Mexico 87502-6110
Telephone (505) 827-2855
Fax: (505) 827-2836



PETER MACCIGRUE
Secretary

December 2, 1999

Howard E. Moffitt
Deputy Base Civil Engineer
49 CES/CC
550 Tabosa Avenue
Holloman AFB, New Mexico 88330-8458

Dear Mr. Moffitt:

Representatives of the Department have recently (September 28, 1999) inspected the Main Base closed landfill for compliance with its Closure / Post-Closure Care Plan. The landfill appears to have been closed in accordance with the Plan. However, stormwater monitoring devices must be installed and monitored at the base of the downchutes.

In the view of the Department, closure of the Main Base Landfill is substantially complete. The Department hereby officially notifies Holloman Air Force Base that the 30-year Post-Closure Care Period commenced on September 28, 1999. This notification does not relieve the Base of any closure or post-closure requirements under the Regulations. If you have any further questions regarding this matter, please contact Edward Hansen of my staff at 827-2328.

Sincerely,

Butch Tongate
Acting Chief, Solid Waste Bureau

BT:EJH:ejh

cc: Kenneth M. Smith, NMED District IV Manager, Las Cruces
Gary McGinnis, NMED District IV, SWB, Las Cruces
Chuck Hiles, Manager, Compliance Monitoring and Enforcement Section, SWB, Santa Fe

BHATE
Environmental Engineers and Scientists

SOLID WASTE CLOSURE LETTER FOR NMED
BUREAU FOR SWMU 106

PROJECT NO.	SCALE	DATE	DRAWN BY:
9030167	NTS	10/26/04	CM
			DRAWING NO:
			9030167-09

Figure 12

HOLLOMAN AIR FORCE BASE
NEW MEXICO

1.5 SWMU DP-62 Ritas Draw

Location

DP-62 (formerly identified as Area of Concern (AOC) - Ritas Draw) is located in a remote portion of the North Base Area, approximately 300 feet northwest of ERP Site OT-04 (Acid Trailer Burial Site – Solid Waste Management Unit (SWMU) 102). DP-62 is one of many smaller arroyos that terminate into Ritas Draw (Figure 13).

History

DP-62 is northward sloping with a terminus at Ritas Draw. A change in elevation of approximately 30 feet exists from south to north across DP-62. In 1998, during the initial field reconnaissance in the area of AOC-Ritas Draw, two partially buried drums were discovered. These drums were believed to be related to early missile testing that occurred on HAFB during the 1950s. The drums were empty, and the original contents of the drums are unknown.

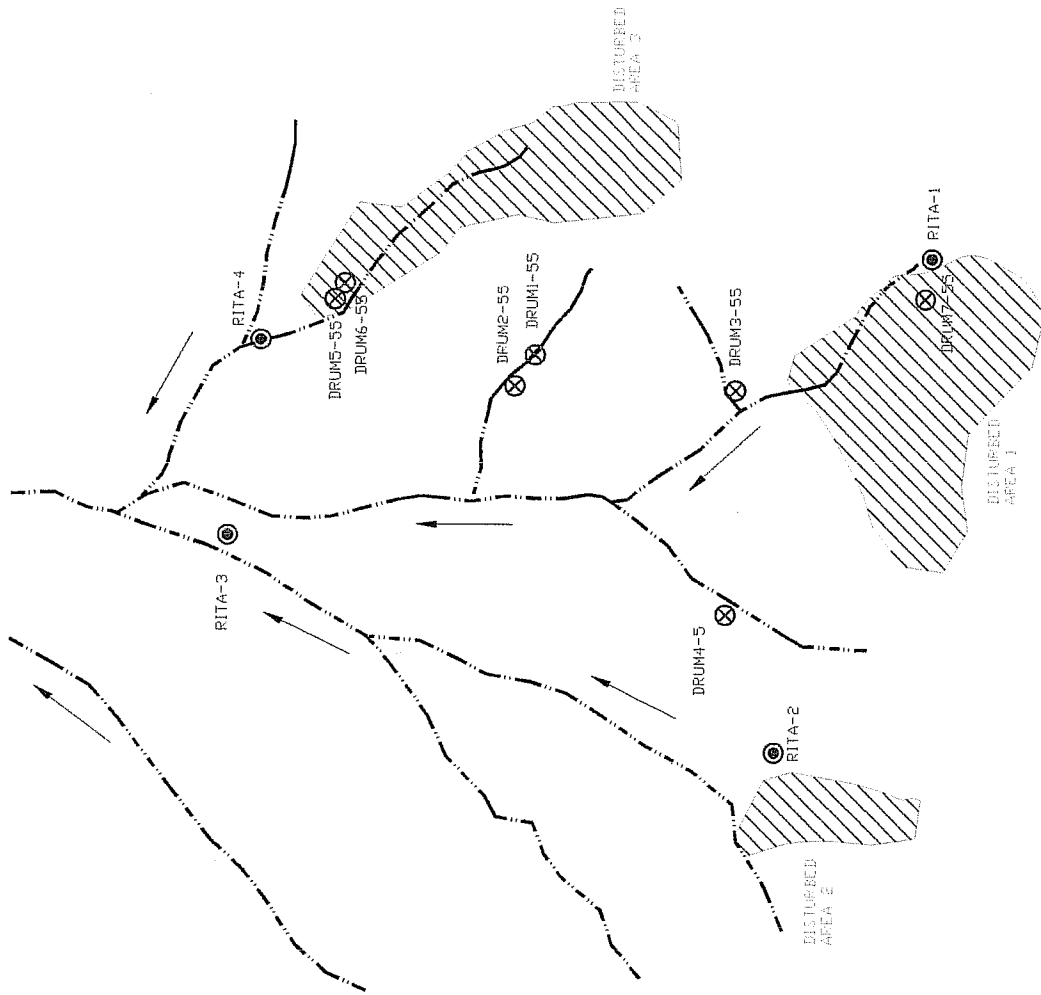
DP-62 is located approximately 300 feet from the Acid Trailer Burial Site (OT-04, SWMU 102), where waste materials were dumped and buried on a one-half acre tract of land along the banks Ritas Draw. The majority of the waste at OT-04 may have originated from the former Unconventional Fuels Storage Area, which is located approximately ½-mile to the south. The Unconventional Fuels Storage Area housed propellants, oxidizers, and other fuel components that were used by the 6585th Test Group for rocket and sled tests conducted at HAFB. Investigations of DP-62 assumed that similar wastes may have been disposed of at this site.

Evaluation of Relevant Information

In 1998, a PA/SI was performed at DP-62. The PA portion of the investigation did not conclusively identify a source for the operational material debris present at the site. However, given the proximity to OT-04 (Acid Trailer Burial Site), it was speculated that similar materials were most likely present at DP-62. The SI field investigation activities at DP-62 consisted of a geophysical survey followed by the installation of direct push technology (DPT) soil borings and DPT groundwater monitoring points.

The geophysical survey identified approximately five areas of high magnetic response which are assumed to be the result of buried metal objects such as drums or debris. Three DPT borings (RITA-1, RITA-2, and RITA-4) were advanced in the immediate proximity of areas of high magnetic response and visible surface disturbance. DPT boring RITA-3 was installed at the confluence of drainage to

RITAS DRAW



LEGEND:

PA-SI DPT SAMPLE
LOCATION

DISTURBED AREA

INTERMITTENT WASHOUT
STREAMBED

FLOW DIRECTION



SITE MAP DP-62 RITAS DRAW

PROJECT NO.	SCALE	DATE	DRAWN BY:	MRM
9030167	AS SHOWN	10/26/04		
				DRAWING NO. 9030167-10

Figure 13

HOLLOMAN AIR FORCE BASE
NEW MEXICO

determine if contamination was present down slope of the debris. DPT borings RITA-3 and RITA-4 were converted into groundwater monitoring points in order to collect groundwater samples.

Table 6 presents a summary of soil analytical results for DP-62. Select soil samples from the boreholes were analyzed for VOCs, SVOCs, explosives, and TAL metals. SVOCs and explosives were not detected in the soil samples. VOCs were not detected with the exception of acetone at 20 µg/kg and 25 µg/kg in samples from 12 and 18 feet below ground surface (bgs) at boring RITA-2. Acetone was also detected in the laboratory blanks and was presumed to be a laboratory artifact in the samples. Results from the analysis of metals in soil samples were compared to NMED SSLs for residential soil. Only arsenic exceeded the residential SSL with RITA-2-12) at 17.4 mg/kg, and the duplicate sample of RITA-2-12DUP at 9.1 mg/kg

Groundwater samples were analyzed for VOCs, SVOCs, explosives, and TAL Metals. Table 7 presents a summary of the groundwater analytical results at DP-62. No VOCs, SVOCs, or explosives were detected in groundwater samples. Eight metals were detected in one or more samples; however, only the detections of arsenic (maximum 0.032 mg/L), antimony (0.036 mg/L) and manganese (1.84 mg/L) exceeded the NMWQCC screening criteria for drinking water.

Additional investigation was requested by NMED to examine soil from directly beneath or as close as possible to the existing drum carcasses. On March 31, 2004, four hand augured soil borings were advanced at the site to an approximate depth of 5 feet. Based on screening results and other relevant observations, one soil sample from each soil boring was selected for laboratory analyses. The sample obtained from the bottom of the boring was selected if the screening failed to identify an appropriate interval. All four soil samples submitted for analysis were collected from the bottom of each boring. The soil samples were analyzed for VOCs, SVOCs, TPH, and RCRA. No VOCs or SVOC were detected above the method detection limits for the samples submitted for laboratory analysis.

Five of the eight RCRA metals were detected above the method detection limits. Arsenic was detected in soil borings SB-01, SB-02, and SB-03 but at concentrations below the Residential Soil Screening Level (SSL) of 3,900 µg/kg. Barium was detected above the method detection limit in all four soil borings but below the Residential SSL. Cadmium was detected in one sample collected from soil boring SB-01 well below the Residential SSL. Chromium was detected in all four soil samples at concentrations below the residential SSL. Selenium was also detected in all four samples but below the Residential SSL.

TABLE 6
SUMMARY OF SOIL ANALYTICAL RESULTS
SWMU DP-62
RITAS DRAW
HOLLOMAN AFB, NEW MEXICO

	Sample No. and Location	Maxium Reported Result for All Samples	NMED SSLs Residential (mg/kg)
TRPH by Method 418.1 (mg/Kg)			
C6 to C10 (GRO)	All Samples	<3	940
C10 to C22 (DRO)	All Samples	<3	940
C22 to C36 (ORO)	All Samples	<3	940
VOCs by Method 8260B ug/Kg			
All Constituents	All Soil Samples	Not Detected	-
Explosives by Method 8083 ug/Kg			
All Constiuents	All Soil Samples	Not Detected	-
Herbicides by Method 8151 ug/Kg			
All Constituents	All Soil Samples	Not Detected	-
SVOCs by Method 8270C ug/Kg			
All Constituents	All Soil Samples	Not Detected	-
TAL Metals by Methods 600/7000s mg/Kg			
Arsenic	RITA-2-12	17.4	3.9
Barium	RITA-1-9	79.3	5,450
Cadmium	DP62-SB01-5	0.192	74
Chromium	DP62-SB01-5A	8.5	10,000
Lead	RITA-1-15	5.3	400
manganese	RITA-1-9	99.3	1,550
Selenium	DP62-SB04-5	3.8	391
Silver	All Samples	<0.5	391
Mercury	All Samples	<0.140	6.11

Notes:

NM= Not Measured

NA= No value available for constituent

Bold Values = reported concentration exceeds NMED SSL (Residential)

TABLE 7
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
SWMU DP-62
RITAS DRAW
HOLLOMAN AFB, NEW MEXICO

CONSTITUENTS	Sample No. and Location	Maxium Reported Result for All Samples	NMWQCC ⁽¹⁾
VOCs by Method 8260B µg/L			µg/L
Benzene	RITA-4-GW-8	0.27J	6,400
Ethylbenzene	RITA-4-GW-8	0.22J	68,000
Toluene	RITA-4-GW-8	0.29J	180,000
Xylenes	RITA-4-GW-8	0.88J	63,000
Explosives by Method 8083 µg/L			µg/L
All Constituents	All Soil Samples	Not Detected	-
SVOCs by Method 8270C µg/L			µg/L
All Constituents	All Soil Samples	Not Detected	-
TAL Metals by Methods 600/7000s mg/L			mg/L
Arsenic	RITA-3-GW-7	0.032	0.1 ⁽²⁾
Barium	All Groundwater Samples	<0.050	1
Cadmium	RITA-3-GWDP-7	0.00012	0.01
Chromium	All Groundwater Samples	<0.050	0.05
Lead	All Groundwater Samples	<0.014	0.05
Selenium	All Groundwater Samples	<0.023	0.05
Silver	All Groundwater Samples	<0.010	0.05
Manganese	RITA-4-GWDP-8	1.84	0.200

Notes:

Bold Values = reported concentration exceeds NMED or Federal Standard

1 NMWQCC - New Mexico Water Quality Control Commission

2 Federal MCL for Arsenic = 0.015 mg/L

Basis for Determination

SWMU DP-62 (formerly known as AOC Ritas Draw) has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

Based on the findings of the PA/SI and the RFI, the presence of barium, cadmium, chromium, and selenium do not pose any unacceptable risks. The presence of arsenic is within the range for soil in the Western United States (USGS 1984...). Similarly, the concentration of arsenic and antimony in groundwater above their respective MCLs were determined to be within the background range at the Base and, thus, do not pose any risk. Manganese in groundwater was also determined to be within the range for natural elemental concentrations. Therefore, no further investigations or corrective actions are recommended for soil and groundwater at DP-62. Further, surface debris at the site including drums were removed and recycled as scrap metal.

References

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